



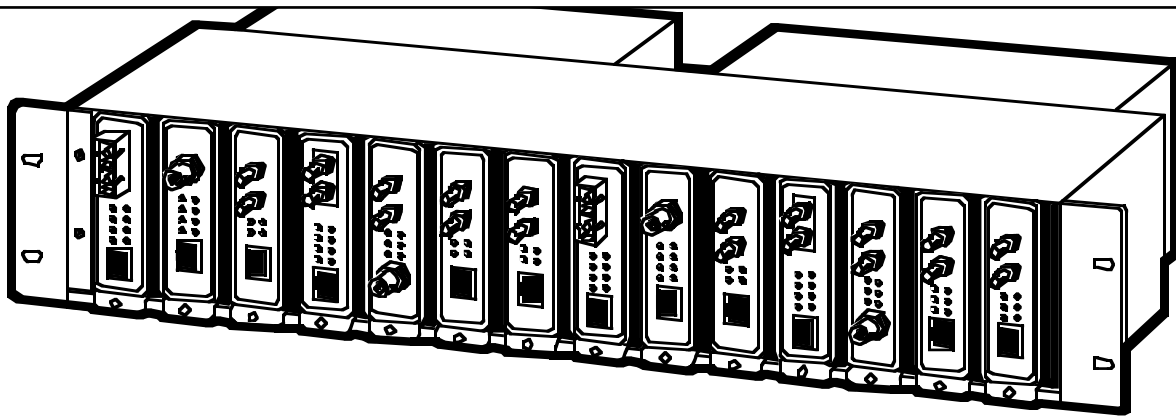
BLACK BOX[®]

NETWORK SERVICES

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Black Box Corporation.

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FLEXPPOINT MODULAR MEDIA CONVERTERS



*The flexible media converter solution that grows with your network.
Now with more interface choices!*

Key Features

- ▶ **More interface choices than any other media converter system.**
- ▶ **Easy installation—no software required.**
- ▶ **FlexPoint Media Converters work as standalone or hot-swappable chassis-based media converters.**
- ▶ **The FlexPoint Power Chassis holds up to 14 media converters and features single or dual hot-swappable AC or DC power supplies.**

FlexPoint™ Modular Media Converters from Black Box provide the ultimate in flexibility and reliability for your expanding multimedia LAN. These standalone converters are also chassis-based modules!

Plus, FlexPoint offers you more interface options than ANY other media-converter system. Your choices include:

- Ethernet
- Gigabit Ethernet
- Token Ring
- UTP
- Single-mode fibre
- Multimode fibre
- Coax
- 10/100 rate converters
- Single-mode to multimode fibre converters
- Long-distance fibre converters

- ATM OC-3
- ATM OC-12

FlexPoint Media Converters make it easy to expand your networks as your company grows. The incredible variety and versatility of this system make it ideal for networks that are subject to constant upgrades and changes.

LEDs on each FlexPoint Media Converter display status.

Tailor the system to your requirements: Get the media converters you need now and use them individually. Then, when your LAN grows, mount your media converters on the wall, in

the 5-Position Rackmounting Kit, or as modules in the Power Chassis. The Power Chassis holds 14 media converters and a Single or Dual AC or DC Power Supply.

10BASE-T to BNC

This media converter joins unshielded twisted-pair (UTP) and coax LANs together to form one network.

For UTP, the 10BASE-T/BNC converter supports Category 3, 4, and 5 wiring at distances of 100 m (328 ft.). This model also corrects wiring-polarity reversals and eliminates crossed cables with a crossover switch.

Typical Application

These media converters are a great choice for smoothing out your network transition from copper to fibre or from multimode to single-mode fibre.



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For coax, this converter has a BNC connector that supports 50-ohm cable at up to 185 m (607 ft.). And you don't need a T-connector—switch-selectable termination is built in.

10BASE-FL to BNC

These 10BASE-FL to 10BASE2 media converters connect a ThinNet LAN to fibre to form one network.

For fibre, these converters use ST connectors. They come in 850-nm multimode, 1300-nm multimode, and 1300-nm single-mode models. The fibre length is limited to 2 km (1.2 mi.) per IEEE 802.3 timing.

On the coax side, the converters have BNC connectors and support 50-ohm cable at distances of up to 185 m (607 ft.). Thirty workstations can be connected to this segment per the 802.3 IEEE standard.

A switch-selectable terminator is built in.

10BASE-T to 10BASE-FL

These media converters join unshielded twisted-pair (UTP) and fibre LANs into one network. They support half- and full-duplex (10- and 20-Mbps) operation.

For fibre, these converters use SC or ST connectors in 850-nm multimode, 1300-nm multimode, 1300-nm single-mode, or 1550-nm single-mode.

For UTP, these media converters use an EIA/TIA modular 568 RJ-45 connector and support Category 3, 4, and 5 wiring, connecting at distances up to 100 m (328 ft.).

10BASE-T to 10BASE-FL converters also correct wiring-polarity reversals and eliminate crossed cables with a crossover switch.

100BASE-TX to 100BASE-FX

This group of media converters connects Fast Ethernet 100BASE-FX fibre to 100BASE-TX UTP LANs. They use auto-negotiation for full- and half-duplex operation and can handle numerous fibre types.

These converters auto-adapt

to the highest performance level supported by the device that is connected to the UTP port. When the device supports full-duplex, the converter adapts to full-duplex mode and creates a 200-Mbps bandwidth. When the connected device supports only half-duplex, the converter adapts to this mode and creates a 100-Mbps bandwidth. Full- and half-duplex operation can also be controlled by a manual override switch.

The fibre side of these converters operates at 1300 nm or 1500 nm and uses ST or SC connectors. Multimode models can support distances of up to 2 km (1.2 mi.), and the single-mode models can operate at distances of 110 km (68.4 mi.).

The UTP port, which supports distances of up to 100 m (328 ft.), has a modular 568 RJ-45 connector for Category 5 wiring. A crossover switch eliminates the need for crossed cables.

Gigabit UTP to Fibre

Use FlexPoint Gigabit UTP to Fibre Media Converters to convert Gigabit Ethernet 1000BASE-T unshielded twisted-pair (UTP) cable to 1000BASE-SX single- or 1000BASE-LX multimode fibre. The converters comply with the IEEE 802.3 standard.

The converters auto-adapt to the full/half-duplex and flow-control services supported by the device connected to its UTP port. User-selectable override options set the desired mode.

The converters operate in full duplex to provide an effective 2-Gbps data rate or in half-duplex mode to provide a 1-Gbps rate. This maximises the throughput when connecting to high-bandwidth full-duplex services such as servers or switches.

Network flow control is supported via an auto-selected or user-selected "Pause" function that assists in relief of network congestion by providing "back pressure" to the sending device.

The Converter supports 850-nm (SX), 1300-nm (LX), or 1550-nm fiber and uses SC,

MT-RJ, or LC connectors. The Multimode SX supports distances of up to 220 m (722 ft.); the single-mode models support distances of up to 65 km (40.4 mi.).

User-selectable Link Propagation is available for Spanning-Tree redundant network architectures as well as for connection to SNMP or other network-managed devices that monitor link availability. A user-selectable override is provided to isolate the link detection to a per-segment basis.

The Converter's UTP port uses a modular EIA/TIA 568 RJ-45 connector and supports Category 5 or higher wiring with distances of up to 328 ft. (100 m). Automatic polarity detection and correction assists in network installation and maintenance.

Token Ring UTP/Fibre

For Token Ring LANs with fibre-to-copper conversions, these models automatically sense and configure themselves to the network ring speed. They also self-configure to attached devices through an automatic sensing circuit.

The UTP port can attach to a workstation's network interface card, ring-in/ring-out port, or lobe. This converter can also support server or workstation fibre attachments and fibre ring extensions.

Category 3, 4, and 5 wiring can be used. At 16 Mbps, Category 5 wiring can support distances of 150 m (492.1 ft.). At 4 Mbps, Category 5 wiring will support distances of 500 m (1604.4 ft.). With fibre, the converter supports 2.5 km (1.6 mi.) using multimode fibre and 20 km (12.4 mi.) using single-mode fibre.

These models also test cable integrity in the network.

100-Mbps Fibre-to-Fibre Mode Converters

Multimode-to-Single-Mode converters connect to the network over multimode fibre. But between Media Converters, they connect with single-mode fibre to give you distances up to 58 km.

Multimode-to-Multimode

versions extend your network up to 5 km.

100-Mbps Fibre-to-Fibre Mode Converters support Token Ring, Ethernet, and Fast Ethernet.

1000-Mbps Multimode-to-Single-Mode

1000-Mbps Multimode-to-Single-Mode converters connect to the network over multimode fibre and extend the network with single-mode fibre. They support single-mode distances up to 50 km (31.1 mi.). The converters comply with IEEE 802.3 and 1000BASE-LX/SX standards.

Mode Converters for ATM OC-3 and OC-12

Mode Converters for ATM support OC-3 or OC-12 standards over ATM networks and the Synchronous Optical Network (SONET).

They're perfect for extending line drops in large corporations, regional and national telco switching offices, and other intercampus telecommunication systems.

The FlexPoint OC-3 Single-Mode to Multimode Fibre Converter provides 155-Mbps connections to extend network distances by connecting multimode fiber networks or devices over single-mode fibre cabling.

The FlexPoint OC-12 Single-Mode to Multimode Fibre Converter provides 622-Mbps connections to extend network distances by connecting multimode fiber networks or devices over single-mode fibre cabling.

LEDs report the availability of power and the detection of devices attached to the fibre ports.

10/100 Rate Converters

This group of rate converters connects fast Ethernet 100BASE-FX fibre to 10BASE-T or 100BASE-TX UTP LANs. They use auto-negotiation for full- and half-duplex operation and can handle numerous fibre types. An override switch provides total manual



control over the 10/100 operation of the UTP port and the half-/full-duplex operation of both the fibre and UTP port.

The fibre port operates at 1300 or 1550 nm (depending on the model) and features SC, ST, or MT-RJ connectors. Multimode models support distances of 2 km, and single-mode models support up to 28 km. Long-haul (LH) models support distances of up to 58, 85, or 100 km.

These converters also feature a 1-MB store-and-forward buffer and MAC address learning.

T1/E1 Copper to Fibre Line Drivers

FlexPoint T1/E1 Copper to Fibre Line Drivers convert coax and twisted pair to multimode or single-mode fibre—and they extend T1/E1 over fibre.

T1/E1 Copper to Fibre Line Drivers feature a crossover switch on the RJ-45/RJ-48 port for easy connections to equipment. Dry relay contacts on pins 3 and 6 of the RJ-45 connector provide connection to alarm equipment. The contact closes when the signal is lost on the copper or fibre connection.

LEDs display the T1/E1 link status, diagnostic modes of operation, and line segment errors.

The line drivers support AMI, B8ZS, and HDB3 line codes.

Specifications

Power Chassis:

Indicators: LED: (1) Power

Power: LMC200: 115–230-VAC, 50–60-Hz, autosensing single power supply;
LMC200-2PS: 115–230-VAC, 50–60-Hz, autosensing dual power supply;
LMC200A-DC: 48-VDC, single power supply;
LMC200A-2PS-DC: 48-VDC dual power supply

Size: 3"H x 19"W x 10"D
(7.6 x 48.3 x 25.4 cm)

Weight: 7 lb. (3.2 kg)

5-Position Rackmounting Kit:

Size: 1.75" (1U) H x 19"W x 5"D
(4.4 x 48.3 x 12.7 cm)

Weight: 2 lb. (0.9 kg)

Modules

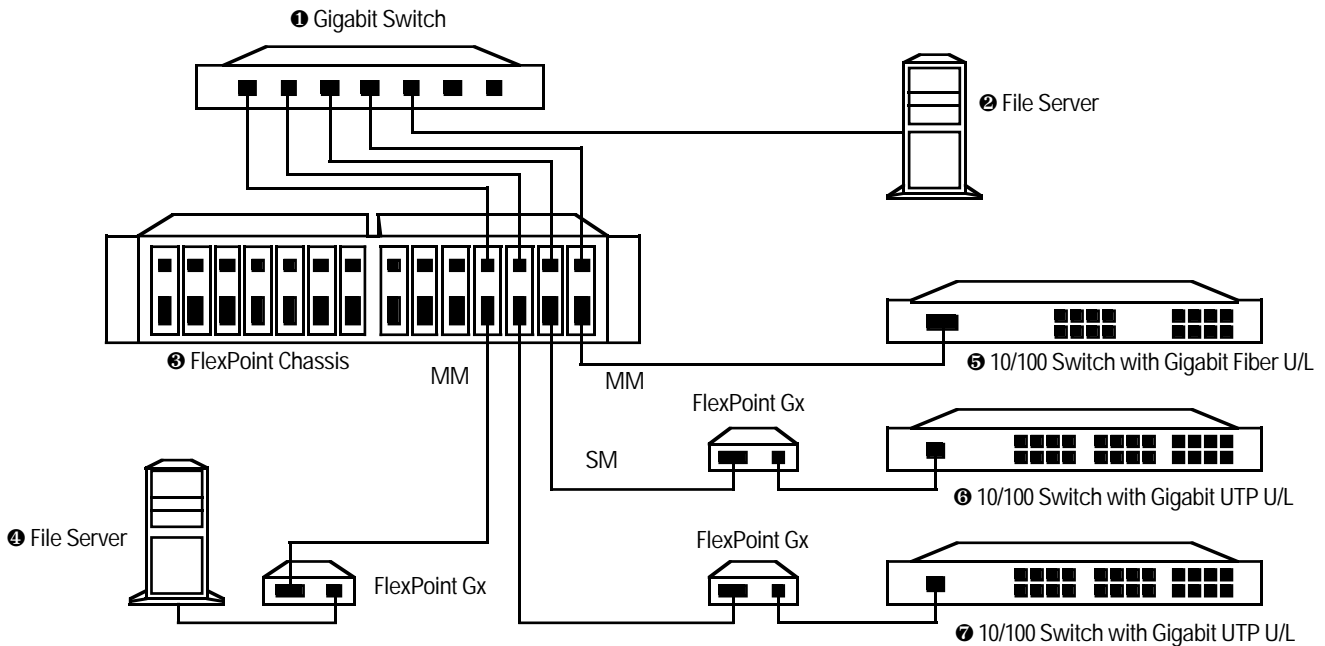
CE Approval: Yes

Power: 110-VAC, 60-Hz, external power supply (230-VAC, 50-Hz version on request) or from Power Chassis

Size: 1"H x 3"W x 4"D
(2.5 x 7.6 x 10.2 cm)

Weight: 0.4 lb. (0.2 kg)

Connect a 1000BASE-T Gigabit switch (❶) to a local file server (❷) using a UTP port. Convert four UTP ports to MM and SM fibre via four converters mounted in a FlexPoint Chassis (❸). One MM link feeds another FlexPoint Gx to a distant server (❹). Another MM link feeds directly into an SX fibre-equipped switch (❺), and two more feed into two other UTP-equipped switches (❻ and ❼).



Ordering Information

ITEM	CODE
FlexPoint 14-Slot Power Chassis	
Single Power Supply	
115–230 VAC.....	LMC200
48 VDC.....	LMC200A-DC
Dual Power Supply	
115–230 VAC.....	LMC200-2PS
48 VDC.....	LMC200A-2PS-DC
5-Position Rackmounting Kit—Nonpowered Rack	
Holds up to Five FlexPoint Media Converters..	LMC205
Wallmounting Hardware for Single	
FlexPoint Media Converter.....	LMC206-WALL
FlexPoint Media Converters	
ThinNet	
10BASE-T/BNC.....	LMC210A
10BASE-FL/BNC	
850-nm, Multimode, 2 km	
ST.....	LMC211A-MM
1300-nm, Multimode, 2 km	
ST.....	LMC211A-13MM
1300-nm, Single-Mode, 2 km	
ST.....	LMC211A-SM
10-Mbps UTP to Fibre	
10BASE-T to 10BASE-FL	
850-nm, Multimode, 2 km	
ST.....	LMC212A-MM-R2
SC.....	LMC212A-MM-SC
1300-nm, Multimode, 5 km	
ST.....	LMC212A-13MM-R2
1300-nm, Single-Mode, 15 km	
ST.....	LMC212A-SM-R2
1300-nm, Single-Mode, 28 km	
ST.....	LMC212A-SM-LH-R2
1550-nm, Single-Mode, 85 km	
SC.....	LMC212A-SM-XLH
1550-nm, Single-Mode, 110 km	
SC.....	LMC212A-SM-SLH

Ordering Information

ITEM	CODE
FlexPoint Media Converters (continued)	
100-Mbps UTP to Fibre	
100BASE-TX to 100BASE-FX	
1300-nm, Multimode, 2 km Full Duplex, 412 m	
Half-Duplex	
ST.....	LMC213A-MMST-R2
SC.....	LMC213A-MMSC-R2
MT-RJ.....	LMC213A-MMRJ
VF-45.....	LMC213A-MMVF
1300-nm, Single-Mode, 25 km	
ST.....	LMC213A-SMST-R2
SC.....	LMC213A-SMSC-R2
MT-RJ.....	LMC213A-SMRJ
1550-nm, Single-Mode, 85 km	
SC.....	LMC213A-SM-XLH-R2
1550-nm, Single-Mode, 110 km	
SC.....	LMC213A-SM-SLH-R2
1300-nm, Single-Mode Plus, 58 km	
ST.....	LMC214A-STP-R2
SC.....	LMC214A-SCP-R2
Gigabit UTP to Fibre	
1000BASE-T to 1000BASE-SX (UTP to Fiber)	
850-nm, Multimode, 220 m	
SC.....	LMC1003A-R2
MT-RJ.....	LMC1007A-R2
1000BASE-T to 1000BASE-LX	
1550-nm, Single-Mode, 65 km	
SC.....	LMC1006A-R2
1300-nm, Single-Mode, 10 km	
SC.....	LMC1004A-R2
MT-RJ.....	LMC1008A-R2
LC.....	LMC1009A-R2
1300-nm, Single-Mode, 25 km	
SC.....	LMC1005A-R2
LC.....	LMC1010A-R2
1550-nm, Single-Mode, 65 km	
LC.....	LMC1011A-R2
Token Ring UTP/Fibre	
850-nm, Multimode, 2.5 km.....	LTM215A-MM
1300-nm, Single-Mode, 20 km.....	LTM215A-SM



Ordering Information

ITEM	CODE
FlexPoint Media Converters (continued)	
100-Mbps Fibre-to-Fibre Mode Converters	
1300-nm Multimode to 1300-nm Single-Mode, 5 km–28 km	
ST to ST	LMC250A-ST
SC to SC.....	LMC250A
850-nm Multimode to 1300-nm Single-Mode, 500 m–28 km	
ST to ST	LMC251A-ST
SC to SC.....	LMC251A-SC
1300-nm Multimode to 100BASE-FX 1300-nm Single-Mode, 5 km Multimode to 58 km Single-Mode	
ST to ST	LMC250A-ST-LH
SC to SC.....	LMC250A-LH
850-nm Multimode to 100BASE-FX (SX) 1300-nm Single-Mode, 5 km Multimode to 58 km Single-Mode	
ST to ST	LMC251A-ST-LH
SC to ST	LMC251A-SC-LH
1300-nm Multimode to 1300-nm Multimode, 5 km to 5 km Full Duplex, 412 m to 412 m Half-Duplex	
ST to ST	LMC253A-ST
SC to SC.....	LMC253A-SC
850-nm Multimode to 1300-nm Multimode, 5 km to 5 km Full Duplex, 412 m to 412 m Half-Duplex	
ST to ST	LMC252A-ST
SC to SC.....	LMC252A-SC
1000-Mbps Multimode to Single-Mode Fibre-to-Fibre Mode Converters	
850-nm Multimode to 1300-nm Single-Mode, 220 m Multimode to 5 km Single-Mode	
SC to SC	LMC1001A
850-nm Multimode to 1300-nm Single-Mode, 220 m Multimode to 20 km Single-Mode	
SC to SC	LMC1002A
850-nm Multimode to 1550-nm Single-Mode, 220 m Multimode to 50 km Single-Mode	
SC to SC	LMC1000A

Ordering Information

ITEM	CODE
FlexPoint Media Converters (continued)	
Fibre-to-Fibre Mode Converters for ATM OC-3	
1300-nm Multimode to 1300-nm Single-Mode, 5 km to 28 km	
ST to ST	LMC155A-ST
SC to SC.....	LMC155A
850-nm Multimode to 1300-nm Single-Mode, 5 km to 28 km	
ST to ST	LMC156A-ST
SC to SC.....	LMC156A-SC
1300-nm Multimode to 1550-nm Single-Mode, 5 km to 85 km	
SC to SC	LMC155A-XLH
1300-nm Multimode to 1300-nm Single-Mode, 5 km to 58 km	
ST to ST	LMC155A-ST-LH
SC to SC.....	LMC155A-LH
850-nm Multimode to 1300-nm Single-Mode, 5 km to 50 km	
ST to ST	LMC156A-ST-LH
SC to SC.....	LMC156A-SC-LH
Fibre-to-Fibre Mode Converters for ATM OC-12 LX	
1300-nm Multimode to 1300-nm Single Mode, 550 m to 20 km	
SC to SC.....	LMC622A-LH
1300-nm Multimode to 1300-nm Single Mode, 550 m to 5 km	
SC to SC.....	LMC622A
1300-nm Multimode to 1550-nm Single-Mode, 550 m to 50 km	
SC to SC.....	LMC622A-LLH



Ordering Information

ITEM CODE

FlexPoint Media Converters (continued)

10/100 Rate Converters

1300-nm, Multimode, 2 km

STLMC100A-R2

SCLMC100A-SC-R2

MT-RJLMC100A-RJ-R2

1300-nm, Single-Mode, 28 km

STLMC100A-SM-R2

SC.....LMC100A-SMSC-R2

MT-RJ.....LMC100A-SMRJ-R2

1300-nm, Single-Mode, 58 km

SCLMC100A-SMSC-LH-R2

1550-nm, Single-Mode, 85 km

SCLMC100A-SMSC-XLH-R2

1550-nm, Single-Mode, 100 km

SCLMC100A-SMSC-SLH-R2

T1/E1 Copper to Fibre Line Drivers

1310-nm, Multimode, 5 km

ST.....MT660A-MM

1310-nm, Single-Mode, 28 km

ST.....MT660A-MM

FlexPoint Accessories and Replacement Parts

Power Supply for Power Chassis

115–230 VACPSFP200

48 VDCPSFP20-DC

DC Power Converter, 18-to-72 VDC

StandaloneLMC204A

DC Power Converter

Wallmounting Kit.....LMC206A-WALL-DC

International Power Supply for all

FlexPoint Models (9 V, 1 A)LMC203A

You may also need...

Category 5 Solid-Conductor Cable, 4-Pair,

Straight-Pinned, PVCEYN737MS

Duplex Fibre Optic Cable, PVC, ST-STEFN062-CC

Single-Mode Duplex Fiber Optic Cable, PVC,

ST-ST.....EFN5009

T1 Cable, RJ-48/RJ-48, Straight-PinnedETNMS01

